

# Purchase Order Receipt Listing

Tuesday, May 02, 2017 10:37:12 AM

All amounts are calculated in domestic currency.

All Vendors PO ID PO36046 Receipt Dates from 5/1/2017 to 5/1/2017 All Line Item Types  
All Item ID/GL/WOs All Rec. Employees All Currencies  
Grouped by Vendor ID

Purchase Order ID/ Curr Type	Line Nbr/ Insp Req	Project ID	Reference/ Description/ Cert Std	PO U/M / Stock U/M	Required Date Required Qty	Recv Date/ Recv Emp	Recv Qty (PO U/M)	Cost Per Unit/ Recv Value	Inspected Qty/ Rejected Qty (PO U/M)	MRB Qty/ MRB Reject Qty	Book Amt
<b>Vendor ID \ Vendor Name</b>											
PO36046	1	VU-TW	M001	TW Metals							
USD	No		M304TR0.500W.035 f 304 RD Tube .500 x .035W m137415		5/2/2017 48.0000	5/1/2017 PLOU01	60.0000		0.0000 0.0000	0 0	\$0.00
	2		M304TR0.500W.049 f 304 RD Tube .500 x .049W m137415		5/2/2017 20.0000	5/1/2017 PLOU01	20.0000		0.0000 0.0000	0 0	\$0.00
	3		M304TR0.675W.091 f 304 RD Tube .675 x .091W m137415		5/2/2017 40.0000	5/1/2017 PLOU01	46.5830		0.0000 0.0000	0 0	\$0.00
	4		M304TR0.750W.049 f 304 RD Tube .750 x .049W m137415		5/2/2017 80.0000	5/1/2017 PLOU01	80.0000		0.0000 0.0000	0 0	\$0.00
	5		M4130NT0.750W.04 f 4130 RD Tube .750 x .049W m137415		5/2/2017 20.0000	5/1/2017 PLOU01	23.9170		0.0000 0.0000	0 0	\$0.00
	6		M4130NT0.750W.08 f 4130 RD Tube .750 x .083W m137415		5/2/2017 20.0000	5/1/2017 PLOU01	20.3330		0.0000 0.0000	0 0	\$0.00
	7		M6061T6T0.3125W.0 f ALUM TUBE .3125 x .058W m137415		5/2/2017 20.0000	5/1/2017 PLOU01	24.0000		0.0000 0.0000	0 0	\$0.00

Purchase Order ID/ Curr Type	Line Nbr/ Insp Req	Project ID	Reference/ Description/ Cert Std	PO U/M / Stock U/M	Required Date Required Qty	Recv Date/ Recv Emp	Recv Qty (PO U/M)	Cost Per Unit/ Recv Value	Inspected Qty/ Rejected Qty (PO U/M)	MRB Qty/ MRB Reject Qty	Book Amt
VendorID\Vendor Name		VU-TW\M001	TW Metals								
PO36046	8		71401-45		5/2/2017	5/1/2017	1.0000		0.0000	0	
USD	No		PROCUREMENT QUALITY CLAUSES m137415		1.0000	PL0U01			0.0000	0	\$0.00
Total Received Quantity:											275.8330
Total Qty to Inspect (PO U/M):											0.0000
Total Reject Quantity:											0.0000
Total Receipt Value:											\$0.00
Total Balance Due Quantity:											0.0000



Oneal High-Performance Metals Group



Packing Slip

ORDER NO.: 80851800

FROM: CHIC

PAGE 1

CUST NUMBER: 1203820  
SOLD TO:  
DART AEROSPACE LTD  
1270 ABERDEEN ST  
HAWKESBURY ON  
CANADA

NET WGT: 93.270  
REQ.DATE: 05/02/17  
SHIP TO:  
DART AEROSPACE LTD  
1270 ABERDEEN ST  
HAWKESBURY ON  
ONTARIO CANADA

CN K6A 1K7

CN K6A 1K7

SALESPERSON: GLENN SCOTT  
TERMS: NET 30 DAYS  
F.O.B.: DESTINATION  
CUST ORD NO.: PO36046

SHIP BY: 04/26/17  
VIA: COMMON CARRIER  
FREIGHT: PREPAID  
RELEASE NO.:  
RECEIVING PHONE:

LINE ITEM DESCRIPTION

0001 36476 SMLS CD 316/L A269 1/2 OD X .035 WA WIDTH LENGTH 20' ML

CLN#	ORD QTY	INVOICE QTY	SHIPPED QTY	WT
	60.000 FT	60.000 FT	60.000 FT	10.426

PCS 3

\*\* 1 TEST REPORTS REQUIRED \*\*  
\*\* 1 CERTS REQUIRED \*\*

ECCN: 2B999.g Export License: NLR  
PO:49351216 HT:YX1506679 PC: 3  
MLT:CHINA MFG:CHINA

Expiration Date: 0/00/00  
UOM

CUSTOMER QTY:  
SLB/CL:-

0002 36506 SMLS CD 304/L A269 1/2 OD X .049 WA 20' ML

CLN#	ORD QTY	INVOICE QTY	SHIPPED QTY	WT
	20.000 FT	20.000 FT	20.000 FT	4.718

PCS 1

\*\* 1 TEST REPORTS REQUIRED \*\*  
\*\* 1 CERTS REQUIRED \*\*

ECCN: 2B999.g Export License: NLR  
PO:49339196 HT:YX1506712 PC: 1  
MLT:CHINA MFG:CHINA

Expiration Date: 0/00/00  
UOM

CUSTOMER QTY:  
SLB/CL:-

0003 38420 SMLS 304/L A-312 3/8 SCH 40 17/24 FT

CLN#	ORD QTY	INVOICE QTY	SHIPPED QTY	WT
	40.000 FT	46.583 FT	46.583 FT	26.685

PCS 2

\*\* 1 TEST REPORTS REQUIRED \*\*  
\*\* 1 CERTS REQUIRED \*\*

ECCN: 2B999.g Export License: NLR  
PO:49365461 HT:11H347 PC: 2  
MLT:CHINA MFG:CHINA

Expiration Date: 0/00/00  
UOM

CUSTOMER QTY:  
SLB/CL:LRZM39

SP75-2

THANK YOU FOR THIS ORDER

TERMS AND CONDITIONS APPLICABLE TO THE SALE OF THESE PRODUCTS ARE SET FORTH ON OUR WEBSITE FOR YOUR CAREFUL REVIEW.  
<http://www.twmetals.com/invoice-terms.html>



" O'Neal High-Performance Metals Group



# Packing Slip

ORDER NO.: 80851800 FROM: CHIC PAGE 2

CUST NUMBER: 1203820 NET WGT: 93.270 REQ.DATE: 05/02/17 EARLY  
SOLD TO: SHIP TO:  
DART AEROSPACE LTD DART AEROSPACE LTD  
1270 ABERDEEN ST 1270 ABERDEEN ST  
HAWKESBURY ON HAWKESBURY ON  
CANADA ONTARIO CANADA  
CN K6A 1K7 CN K6A 1K7

SALESPERSON: GLENN SCOTT SHIP BY: 04/26/17  
TERMS: NET 30 DAYS VIA: COMMON CARRIER  
F.O.B.: DESTINATION FREIGHT: PREPAID  
CUST ORD NO.: P036046 RELEASE NO.:  
RECEIVING PHONE:

LINE ITEM DESCRIPTION  
0004 36860 SMLS CD 304/L A269 3/4 OD X .049 WA WIDTH LENGTH  
20' CL

CLN#	ORD QTY	INVOICE QTY	SHIPPED QTY	WT	PCS
	80.000 FT	80.000 FT	80.000 FT	29.338	4

\*\* 1 TEST REPORTS REQUIRED \*\*

\*\* 1 CERTS REQUIRED \*\*

ECCN: 2B999.g Export License: NLR  
PO:49334360 HT:YX1501783 PC: 4  
MLT:CHINA MFG:CHINA

Expiration Date: 0/00/00  
CUSTOMER QTY: UOM  
SLB/CL:-

0005 33047 CDS 4130 6736 3/4 X .049 17/24 FT

CLN#	ORD QTY	INVOICE QTY	SHIPPED QTY	WT	PCS
	20.000 FT	23.917 FT	23.917 FT	8.771	1

\*\* 1 TEST REPORTS REQUIRED \*\*

\*\* 1 CERTS REQUIRED \*\*

ECCN: 9A991.d Export License: NLR  
PO:49335280 HT:593355 PC: 1  
MLT: MFG:GERMANY

Expiration Date: 0/00/00  
CUSTOMER QTY: UOM  
SLB/CL:BENTELER\*

0006 33096 SMLS CD 4130 6736 3/4 OD X .083 WA 17/24 FT

CLN#	ORD QTY	INVOICE QTY	SHIPPED QTY	WT	PCS
	20.000 FT	20.333 FT	20.333 FT	12.022	1

\*\* 1 TEST REPORTS REQUIRED \*\*

\*\* 1 CERTS REQUIRED \*\*

ECCN: 9A991.d Export License: NLR  
PO:49362520 HT:8602384 PC: 1  
MLT:GERMANY MFG:GERMANY

Expiration Date: 0/00/00  
CUSTOMER QTY: UOM  
SLB/CL:1632158

*SPH-52*

## THANK YOU FOR THIS ORDER

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PRODUCTS ARE SET FORTH ON OUR WEBSITE FOR YOUR CAREFUL  
REVIEW.  
<http://www.twmetals.com/invoice-terms.html>



O'Neal High-Performance Metals Group



# Packing Slip

ORDER NO.: 80851800 FROM: CHIC PAGE 3

CUST NUMBER: 1203820 NET WGT: 93.270 REQ.DATE: 05/02/17 EARLY  
 SOLD TO: SHIP TO:  
 DART AEROSPACE LTD DART AEROSPACE LTD  
 1270 ABERDEEN ST 1270 ABERDEEN ST  
 HAWKESBURY ON HAWKESBURY ON  
 CANADA CN K6A 1K7 ONTARIO CANADA CN K6A 1K7

SALESPERSON: GLENN SCOTT SHIP BY: 04/26/17  
 TERMS: NET 30 DAYS VIA: COMMON CARRIER  
 F.O.B.: DESTINATION FREIGHT: PREPAID  
 CUST ORD NO.: PO36046 RELEASE NO.:  
 RECEIVING PHONE:

LINE ITEM DESCRIPTION WIDTH LENGTH  
 0007 41723 D6061-T6 5/16 OD X .058 WA 12 FT ML

CLN# ORD QTY INVOICE QTY SHIPPED QTY WT  
 24.000 FT 24.000 FT 24.000 FT 1.310

PCS  
2

\*\* 1 TEST REPORTS REQUIRED \*\*

\*\* 1 CERTS REQUIRED \*\*

ECCN: EAR99 Export License: NLR Expiration Date: 0/00/00  
 PO:49354489 HT:388604 PC: 2 CUSTOMER QTY:  
 MLT:UNITED STATES MFG:UNITED STATES SLB/CL:388604 UOM

BROKERS KUEHNE AND NAGEL LTD

AREA		TYPE OF PKG		PACK INFO			
YRC	REDDICRATE	PKGS	GRS WEIGHT	WIDTH	LENGTH	HGHT	
		1.000	144.000	5.0000	300.0000	4	
		1.000	144.000				

BY: CL  
 RT 000-

UNLOAD TYPE: NONE SPECIFIED

*801752*

DATE SHIPPED \_\_\_\_\_

DATE FILLED \_\_\_\_\_

THANK YOU FOR THIS ORDER

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O'Neal High-Performance Metals Group



Packing  
Slip

ORDER NO.: 80851800

FROM: CHIC

PAGE 4

CUST NUMBER: 1203820 NET WGT: 93.270 REQ.DATE: 05/02/17 EARLY  
SOLD TO: SHIP TO:  
DART AEROSPACE LTD DART AEROSPACE LTD  
1270 ABERDEEN ST 1270 ABERDEEN ST  
HAWKESBURY ON HAWKESBURY ON  
CANADA CN K6A 1K7 ONTARIO CANADA CN K6A 1K7

SALESPERSON: GLENN SCOTT SHIP BY: 04/26/17  
TERMS: NET 30 DAYS 235 TUBEWAY  
F.O.B.: DESTINATION CAROL STREAM IL 60188  
CUST ORD NO.: PO36046  
VIA: COMMON CARRIER  
FREIGHT: PREPAID  
RELEASE NO.:  
RECEIVING PHONE:

"TW Metals MSDS data is available on our web site at [www.twmetals.com](http://www.twmetals.com). MSDS data can be found under the Technical Resources Tab, Product Statistics & Data and the TW Metals MSDS's heading. If you do not have web site access you may telephone 610-458-1300 and we will mail or fax a copy of our current MSDS data to your location."

"CERTIFICATE OF CONFORMANCE"

"TW Metals certifies that the material supplied on this purchase order and contained in the heat/lot number referenced above has been manufactured, inspected, and tested in accordance with the material specification. These records are on file at TW Metals. Packaging material for shipments to Europe and China consists of manufactured wood products and complies with the European emergency measures for coniferous non-manufactured wood packing material"

Authorized Test Report Clerk Cynthia Limon Date: 4/26/17

These commodities have been exported from the United States in accordance with the U.S. export control laws, export administrations regulations. Diversion contrary to U.S. law prohibited.

THANK YOU FOR THIS ORDER

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PRODUCTS ARE SET FORTH ON OUR WEBSITE FOR YOUR CAREFUL  
REVIEW.  
<http://www.twmetals.com/invoice-terms.html>

## MILL TEST REPORT

Purchaser.: TW METALS-Carol Stream				Certificate No.: 2016-10-150					
Contract No.: TWMP.O.No.: M49351216				Date of Issue.: 2016.10.26					
Commodity: Stainless Steel Seamless Tubes		Specifications: ASTM A213-15c/ASME SA213-15/ASTM A269-15a EAW							
Process: Cold Drawn				Delivery Condition: OD Polished to 240 Grit					
Steel Grade	Heat Number	Lot Number	Dimensions		Quantity				
TP316/TP316L	YX1506-679	9-108	1/2"x0.035"x20'		Pieces	Feet			
					650	13,000			
Chemical Composition by Weight (%)									
Element	C	Mn	P	S	Si	Cr	Ni	Mo	Co
Requirements	≤0.035	≤2.00	≤0.045	≤0.030	≤1.00	16.00-18.00	10.00-14.00	2.0-3.0	-
Ladle Analysis	0.016	0.66	0.031	0.004	0.31	16.61	10.05	2.02	-
Product Analysis	0.021	0.65	0.038	0.004	0.32	16.79	10.08	2.03	-
Mechanical Properties									
Test Item	Elongation (% in 2")		Tensile Strength (PSI)			Yield Strength (PSI)			
			Rm			Rp / 0.2%			
Requirements	≥35		≥75,000			≥30,000			
Test Results	63/64		85,000/86,000			41,000/42,000			
Test Item	Reduction of Area Z (%)	Hardness	Cold Bend Test	Flaring Test	Flattening Test	Flange Test	P.M.I. Test		
Requirements	-	HRB≤80	-	22%	e=0.09	-	-		
Test Results	-	74/76	-	Passed	Passed	-	OK		
Test Item	Eddy Current Test	Air Underwater	Ultrasonic Test	Intergranular Corrosion Test	Macroscopic Inspection				
Requirements	ASTM E 426	-	-	ASTM A262 E	End Cut	Appearance			
Test Results	Passed	-	-	OK	OK	OK			

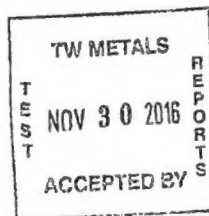
ISO 9001:2008 Certified by CAS 117 16 QU 0053-06 ROS

PED Certified by SZUTEST 2195-PED-1526002

## Additional Remarks:

- (1) All tubes annealed to above 1900 Deg F and water quenched below 800 Deg F in 3 minutes
- (2) All tubes tested per ASTM A1016-14
- (3) Materials is NACE MR0103-2007 compliant (per Section 2.5)
- (4) Materials is NACE MR0175/ISO 15156-2003 compliant (per Section 4.2.1)
- (5) In Compliance with EN 10204-3.1
- (6) In Compliance with RoHS Stipulation
- (7) No weld repair performed
- (8) Free from mercury contamination
- (9) Free from radioactive contamination
- (10) Billets melt and pipes/tubes manufactured in China
- (11) All tubes 100% PMI tested
- (12) All tubes 100% Eddy Current tested

CANNOT CERTIFY COMPLIANCE  
FAR BAA / DFARS BAA / FAR TAA



By:



James Shi

James Shi / Manager

Quality Control Department

We hereby certify that this report is true and correct.

Jiangsu Pufa Stainless Steel Tube Co., Ltd.

No. 99, Xuean Middle Road, Dongchen Town, Rugao City, Jiangsu Province, P.R.China

## MILL TEST REPORT

Purchaser.: TW METALS-Carol Stream				Certificate No.: 16-3-54					
Contract No.: TWM P.O.No.: M49339196				Date of Issue.: 2016.3.31					
Commodity: Stainless Steel Seamless Tubes				Specifications: ASTM A213-15c/ASME SA213-15/ASTM A269-15a EAW					
Process: Cold Drawn				Delivery Condition: OD Polished to 240 Grit					
Steel Grade	Heat Number	Lot Number	Dimensions			Quantity			
TP304/TP304L	YX1506-712	2-109	1/2" x 0.049" x 20'			Pieces	Feet		
						1000	20,000		
Chemical Composition by Weight (%)									
Element	C	Mn	P	S	Si	Cr	Ni	Mo	Co
Requirements	≤0.035	≤2.00	≤0.045	≤0.030	≤1.00	18.00-20.00	8.00-12.00	-	-
Ladle Analysis	0.013	0.65	0.032	0.002	0.32	18.28	8.05	-	-
Product Analysis	0.017	0.61	0.033	0.002	0.28	18.31	8.55	-	-
Mechanical Properties									
Test Item	Elongation (% in 2")		Tensile Strength (PSI) Rm			Yield Strength (PSI) Rp / 0.2%			
Requirements	≥35		≥75,000			≥30,000			
Test Results	61/62		93,000/94,000			40,000/41,000			
Test Item	Reduction of Area Z (%)	Hardness	Cold Bend Test	Flaring Test	Flattening Test	Flange Test	P.M.I. Test		
Requirements	-	HRB≤80	-	22%	e=0.09	-	-		
Test Results	-	76/78	-	Passed	Passed	-	OK		
Test Item	Eddy Current Test	Air Underwater Pressure Test	Ultrasonic Test	Intergranular Corrosion Test	Macroscopic Inspection				
Requirements	ASTM E 426	-	-	ASTM A262 E	End Cut	Appearance			
Test Results	Passed	-	-	OK	OK	OK			

ISO 9001:2008 Certified by Intertek 110703068

PED Certified by SZUTEST 2195-PED-1526002

## Additional Remarks:

- (1) All tubes annealed to above 1900 Deg F and water quenched below 800 Deg F in 3 minutes
- (2) All tubes tested per ASTM A1016-15
- (3) Materials is NACE MR0103-2007 compliant (per Section 2.5)
- (4) Materials is NACE MR0175/ISO 15156-2003 compliant (per Section 4.2.1)
- (5) In Compliance with EN 10204-3.1
- (6) In Compliance with RoHS Stipulation
- (7) No weld repair performed
- (8) Free from mercury contamination
- (9) Free from radioactive contamination
- (10) Billets melt and pipes/tubes manufactured in China
- (11) All tubes 100% PMI tested
- (12) All tubes 100% Eddy Current tested

**CANNOT CERTIFY COMPLIANCE  
FAR BAA / DFARS BAA / FAR TAA**



By:



James Shi

James Shi / Manager

Quality Control Department

We hereby certify that this report is true and correct.

Shanghai Pufa Stainless Steel Pipe Factory

No. 59, Shuangye Road, Wanggang, New Pudong District, Shanghai, China

Customer: TWMEXT PO#:M49365461 SO#:LRZM39

Item:S44L00C Bundle:WLPW067TA24-125 Heat#:11H347

MTR#:WLPSPW067137.GIF

## MILL INSPECTION CERTIFICATE

EN 10204 3.1

CHANGSHU WALSH SPECIALTY STEEL CO. LTD.

CUSTOMER: TACHEN STAINLESS PIPE CO. LTD.		HEAT NO.: 11H347	
DATE: 2015/07/03		SPECIFICATION: ASTM A312/A312M S31603 S31603A 316-13	
COMMODITY: STAINLESS STEEL SEAMLESS PIPES		CERTIFICATE NO.: 20150703200857	
DELIVERY CONDITION: COLD FINISHED SOLUTION ANNEALED AND PICKLED		GRADE: TP30403L 9-89	

ELEMENTS																											
	C	Si	Mn	P	S	Al	Cr	Mo	Ni	Cu	Ti	Nb	Co	V	B	Al	Sb	Pb	As	Sn	Fe	Bi	Zr	Al-Ti	PREL	Fertile content	
SPECIFICATION	min	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	max	0.035	0.750	2.000	0.045	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	
RESULTS		0.022	0.410	0.050	0.002	0.001	0.070	0.010																			

SIZE NPS (") x WT (SCH) x LG (mm)	PACKAGE NO.	PIECES	WEIGHT		TS	YS	EL (50mm)	HARDNESS HRB	FLATTENING TEST	FLARING TEST	I.C. TEST	PITTING CORROSION (mg/dm <sup>2</sup> day)	GRAIN SIZE	LATHING TEST	HYDROSTATIC TEST MPa	EDDY CURRENT TEST	ULTRASONIC TEST
			FT	(kg)													
3/8" x 0.095" x 7315	7424-125	60	1315.06	332	610/610	260/260	63.5/63.5	76/75.5	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE
3/8" x 0.095" x 7315	7424-148	52	1210.3	398	605/605	265/265	64/63	75/76	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE	ACCEPTABLE
TOTAL:		112	2525.36	730													

1. WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN BEEN MANUFACTURED, SAMPLED, TESTED AND INSPECTED IN ACCORDANCE WITH THE RESULTS OF THE CONTRACT, AND CONFORM TO THE SPECIFICATION ABOVE.

2. MATERIAL FREE FROM MERCURY CONTAMINATION AND RADIOACTIVE CONTAMINATION

3. NO REPAIR BY WELDING.

4. THE CERTIFICATE SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN APPROVAL OF THE COMPANY.

ACCEPTED BY: *Sam Bin*

QUALITY MANAGER

TW METALS  
REPORT  
FEB 16 17  
ACCEPTED BY

AS PER ASTM A312/A312M S31603 S31603A 316-13

DATE: 2015/07/03 LENGTH: 2024FT

AS PER FORMER INVOICE NO. 151784

IC TEST PER ASTM A312/A312M S31603 S31603A 316-13

NO REPAIR BY WELDING

MATERIAL FREE FROM MERCURY CONTAMINATION

COUNTRY OF ORIGIN: CHINA

EQUIPMENT: PRACTICE: ASTM A312

REFERENCE DOCUMENT: INTRIL FILE

WATER QUENCHED ANNEALING TEMPERATURE: 1060C

MATERIAL COMPLIANT WITH ROHS DIRECTIVE 2002/95/EC

FREE OF RADIATION

Selling Agent: 1907

ADDRESS: 56# RENHUI ROAD, HAYU TOWN, CHANGSHU CITY, JIANGSU PROVINCE, CHINA 215519 TEL: +86-512-52566260 FAX: +86-512-52568027

WILCS-QP-T24-05

## MILL TEST REPORT

Purchaser.: TW METALS-Carol Stream				Certificate No.: 15-11-130					
Contract No.: TWM P.O.No.: M49334360				Date of Issue.: 2015.11.7					
Commodity: Stainless Steel Seamless Tubes				Specifications: ASTM A213-15/ASME SA213-13/ASTM A269-14el EAW					
Process: Cold Drawn				Delivery Condition: OD Polished to 240 Grit					
Steel Grade	Heat Number	Lot Number	Dimensions			Quantity			
TP304/TP304L	YX1501-783	9-40	3/4" x 0.049" x 20'			Pieces	Feet		
						285	5,700		
Chemical Composition by Weight (%)									
Element	C	Mn	P	S	Si	Cr	Ni	Mo	Co
Requirements	≤0.035	≤2.00	≤0.045	≤0.030	≤1.00	18.00-20.00	8.00-12.00	-	-
Ladle Analysis	0.012	0.68	0.031	0.001	0.37	18.35	8.05	-	-
Product Analysis	0.019	0.70	0.033	0.002	0.39	18.37	8.31	-	-
Mechanical Properties									
Test Item	Elongation (% in 2")		Tensile Strength (PSI) Rm			Yield Strength (PSI) Rp / 0.2%			
Requirements	≥35		≥75,000			≥30,000			
Test Results	63/64		87,000/88,000			34,000/35,000			
Test Item	Reduction of Area Z (%)	Hardness	Cold Bend Test	Flaring Test	Flattening Test	Flange Test	P.M.I. Test		
Requirements	-	HRB≤80	-	22%	e=0.09	-	-		
Test Results	-	75/77	-	Passed	Passed	-	OK		
Test Item	Eddy Current Test	Air Underwater Pressure Test	Ultrasonic Test	Intergranular Corrosion Test	Macroscopic Inspection				
Requirements	ASTM E 426	-	-	ASTM A262 E	End Cut	Appearance			
Test Results	Passed	-	-	OK	OK	OK			

ISO 9001:2008 Certified by Intertek 110703068

PED Certified by SZUTEST 2195-PED-1526002

## Additional Remarks:

- (1) All tubes annealed to above 1900 Deg F and water quenched below 800 Deg F in 3 minutes
- (2) All tubes tested per ASTM A1016-14
- (3) Materials is NACE MR0103-2007 compliant (per Section 2.5)
- (4) Materials is NACE MR0175/ISO 15156-2003 compliant (per Section 4.2.1)
- (5) In Compliance with EN 10204-3.1
- (6) In Compliance with RoHS Stipulation
- (7) No weld repair performed
- (8) Free from mercury contamination
- (9) Free from radioactive contamination
- (10) Billets melt and pipes/tubes manufactured in China
- (11) All tubes 100% PMI tested
- (12) All tubes 100% Eddy Current tested

CANNOT CERTIFY COMPLIANCE  
FAR BAA / DFARS BAA / FAR TAA

By:



James Shi

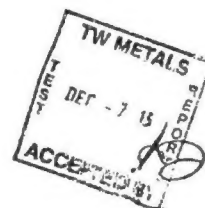
James Shi / Manager

Quality Control Department

We hereby certify that this report is true and correct.

Shanghai Pufa Stainless Steel Pipe Factory

No. 59, Shuangye Road, Wanggang, New Pudong District, Shanghai, China



Benteler Steel/Tube GmbH  
Postfach 13 40  
33043 Paderborn  
Deutschland  
Tel.: +49.5254.81-0 Fax: +49.5254.13666

**BENTELER**  
Steel/Tube

**ABNAHMEPRÜFZEUGNIS EN 10204-3.1**  
INSPECTION CERTIFICATE EN 10204-3.1  
CERTIFICAT DE RECEPTION EN 10204-3.1  
EN 10204:2005-01

Benteler Steel/Tube GmbH - Postfach 1340 - 33043 Paderborn - Deutschland

TW Metals  
The Aboretum, Suite 204  
760 Constitution Drive  
EXTON PA 19341  
USA

Prüf-Nr.: 1 / 3  
Inspection No.:  
No. du certificat:

Dokument-Nr.: 41-890052/001/P  
Document No.:  
No. du document:

Kunden-Bestell-Nr.:  
Purchase Order No.:  
No. de commande du client:

Benteler Auftrags-Nr.:  
Benteler Order No.:  
No. de commande Benteler:

Versandanzeigen-Nr.:  
Dispatch Note No.:  
No. d'avis d'expédition:

Produkt: NAHTLOSE STAHLROHRE  
Product: SEAMLESS STEEL TUBES  
Produit: TUBES D'ACIER SANS SOUDURE

Hersteller:  
Manufacturer:  
Producteur:  
Warmrohrwerk/Zieherai  
(DIN EN ISO 9001, ISO/TS-16949 CERTIFIED BY TÜV NORD CERTI  
(PED 9723/EC CERTIFIED BY TÜV NORD SYSTEMS)

Herstellerzeichen:  
Manufacturer's brand:  
Marque du producteur:  


Stempel des Abnahmebeauftragten: WA  
Stamp of the inspection representative:  
Poinçon du contrôleur:

Stahlschmelzungsverfahren: ELEKTROSTAHL  
Steelmaking process: ELECTRIC FURNACE  
Procédé d'élaboration de l'acier: FOUR ELECTRIQUE

Lieferbedingungen: AMS-T-67368 Type 1, ASTM-A 519-2006, MIL-T-67368 Type 1, AMS6360 Rev. M

Terms of delivery:  
Conditions de livraison:

Maße - Toleranzen: AMS 2253E-83, Aircraft Type, Seamless, Cold Finished

Dimensions-tolerances:  
Dimensions-tolérances:

Stahlsorte: GRADE 4130

Steel grade:  
Nuance d'acier:

Lieferzustand: N

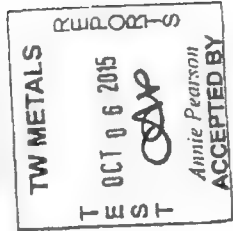
Delivery condition:  
État de livraison:

Produktkennzeichnung: FSD: BENTELER AMS6360M-AMS-T-6736 B 1-MIL-T-6736 B 1 4130 N HEAT-NO. CD AQ S DIMENSIONS

Product marking: WA GERMANY

Marquage du produit:

ACZ = Ätzzeichenbeschriftung, Etching ink marking, Gravure à l'encre couleur - LC = Lasermarkenzeichnung, Laser marking, Marquage laser - PKE = Etikettenmarkenzeichnung, Tag marking, Marquage au étiquette - PS = Prägestempel die stamp, marquage par poinçonnage - TS = Trennstempelmarkenzeichnung, Ink jet spray marking, Imprimante à jet d'encre



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**BENTELER**

Steel/Tube

**ABNAHMEPRÜFZEUGNIS EN 10204-3.1**  
INSPECTION CERTIFICATE EN 10204-3.1  
CERTIFICAT DE RECEPTION EN 10204-3.1

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Prüf-Nr.:  
Inspection No.:  
No. du certificat:

Dokument-Nr.:  
Document No.:  
No. du document:

Pos.	Stück	Maße	Länge	Gewicht	Schmelzen-Nr.	Prüfdruck	Rohr-Nr.-Gruppe	Vielfachlängen
Item	Number	Dimensions	Length	Weight	Heat No.	Test pressure	Tube number group	Multiple lengths
Poste	Nombre	Dimensions	Longueur	Poids	No. de coulée	Pression d'épreuve	Série de no. des tubes	Longueurs multiples
0002	150	0.750" O.D. * 0.049" WT 20 FT - 24 FT	3592,52 feet	1301 lbs	593355			

**Schmelzenanalyse [%] / Heat analysis [%] / Analyse sur coulée [%]**

Pos.	Schmelzen-Nr.	C	SI	MN	P	S	CR	MO	NI	CU
Item	Heat No.									
Poste	No. de coulée									
0002	593355	0,320	0,240	0,55	0,006	0,002	0,88	0,18	0,06	0,08

**Produktanalyse [%] / Product analysis [%] / Analyse sur produit [%]**

Pos.	Schmelzen-Nr.	C	SI	MN	P	S	CR	MO	NI	CU
Item	Heat No.									
Poste	No. de coulée									
0002	593355	0,320	0,240	0,54	0,005	0,002	0,88	0,18	0,05	0,07

**Prüfergebnisse / Test results / Résultats des essais**

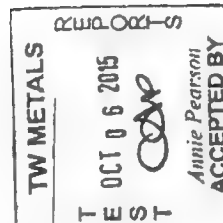
Die Rohra wurden zerstörungsfrei geprüft:  
The tubes are non destructive tested:  
Les tubes ont passé un essai non destructif:

PASSED

Augensichtkontrolle:	Materialverwechslungsprüfung:	Maßkontrolle:
Visual inspection:	Material conformity test:	Dimensions examination:
Examen visuel:	Vérification de la nuance:	Vérification des dimensions:
PASSED	PASSED	PASSED

**Ergebnisse der mechanischen Prüfung / Results of mechanical testing / Résultats des essais mécaniques**

Die Probenahme erfolgte an Vielfachlängen.  
The sampling was carried out on multiple lengths.  
L'échantillonnage était réalisé aux longueurs multiples.



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Deutschland  
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**BENTELER**

Steel/Tube

**ABNAHMEPRÜFZEUGNIS EN 10204-3.1**

INSPECTION CERTIFICATE EN 10204-3.1

CERTIFICAT DE RECEPTION EN 10204-3.1

Dokument-Nr.: 41-890052/001/P

Document No.:

No. du document:

Prüf-Nr.: 3 / 3

Inspection No.:

No. du certificat:

Zugversuch längs Vollprobe / Tensile test longitudinal Full section test specimen / Essai de traction longitudinale Eprouvette a section complete

Pos.	Proben-Nr. Specimen No.	Schmelzen-Nr. Heat No.	Probenabmessung Specimen dimensions	Streckgrenze Yield strength	Zugfestigkeit Tensile strength	Dehnung Elongation
Poste	No. de l'éprouv.	No. de coulée	Dimensions de l'éprouv.	Limite élastique	Résistance à la traction	Allongement
<b>Anforderungen</b>						
<b>Requirements</b>						
<b>Exigences</b>						
0002	000001	593355	19,02 X 1,22	120236	129229	18,00
0002	000002	593355	19,02 X 1,22	120962	128649	18,00
0002	000003	593355	19,02 X 1,22	121832	129374	18,00
0002	000004	593355	19,02 X 1,22	124152	128649	18,00

Randentkohlung / Surface decarburization / Décarburation superficielle

Pos. / Item / Poste: 0002

acc: MIL-T-6736B / AMS-T-6736B, decarburization outside max. 0.23 mm, decarburization outside + inside max. 0.305 mm

Vermerk / Remark / Remarque

Pos. / Item / Poste: 0002

Certificate remarks: The steel grade corresponds to MIL-T-6736B, AMS 6360M, material free from mercury contamination, FAR BAA: 52.225-1 CANNOT COMPLY, DFARS BAA: 252.225-7001 CAN COMPLY, FAR TAA: 52.225-5 CAN COMPLY, No weld repair has been carried out, Country of origin of the material and heat: Germany; see appendix page 1 of 1.

Pos. / Item / Poste: 0002

Macroscopic examination: acc. to ASTM-E 381

Pos. / Item / Poste: 0002

Magnetic particle inspection: acc. to AMS 2301 G/2640, on prematerial

Pos. / Item / Poste: 0002

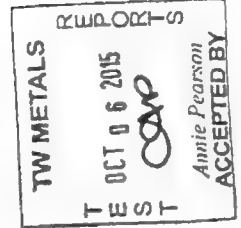
Grain size: acc. to ASTM-E 112; Grain size and finer: 5; Grain size: Longitudinal structure micrography, On prematerial

Verkäufer(in) / Sales personnel / Personne chargée : Mr Schwarz, Tel.: 05254 81-204311, Fax: 204388  
Paderborn Schloß Neuhaus, 17.08.2015, TEL.: 05254.81-201768 FAX: 05254.81-201752

Abnahmebeauftragter  
Inspection representative  
Contrôleur

THOMAS GOLLAN / Tat

Es wird bestätigt, daß die gelieferten Erzeugnisse den techn. Lieferbedingungen des Auftrages entsprechen. Dieses Dokument wurde mittels EDV erstellt und ist ohne Unterschrift rechtsgültig.  
We certify that the supplied products comply with the order specification. This document was prepared by means of electronic data processing and is valid without signature.  
Nous attestons que les produits livrés sont conformes aux stipulations de la commande. Ce document a été établi par traitement électronique de l'information et est valide sans signature.



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33104 Paderborn  
Germany  
Tel.: 49 5254 81-0 Fax: 49 5254 13566

**BENTELER**  
Steel/Tube

Abnahmeprüfzeugnis EN 10204-3.1 / Anhang  
**Inspection Certificate EN 10204.3.1 / appendix**  
Certificat de réception EN 10204-3.1 / appendice

Dokument-Nr.  
**Document No.:**  
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Page: de

Halbzeuguntersuchung: Stahlsorte 4130 / Semi finished product examination: grade 4130 / Produit semi-fini: nuance 4130

Schmelzen-Nr. Heat No. Coulée No.	Position Item Poste	Korngröße Grain size Grosseur de grain (ASTM-E 112)	Härtebarkeit (min. Anforderungen) Hardenability (min. requirements) Trempeabilité (exigence min.) (ASTM-A 255)		Magnetpulverprüfung Magnetic particle inspection Essai à la poudre magnétique (AMS 2301G / 2640J)		Makroätzung Macrostructure test Essai de macrostructure (ASTM-E 381)	
			J(5/16") min. 35 HRC	J(8/16") min. 28 HRC	F max. 0,34	S max. 0,25	max. S2	max. R1 max. C2
592355 Decarburization Depth	002	9 Outside 0,000 mm	42 Inside 0,000 mm	33	0,020	0,015	S2	R1 C2

Der Stahl ist frei von Quecksilberverunreinigungen. / The steel is free of mercury contamination. / L'acier est libre des contaminations de mercure.

Paderborn Schloß Neuhaus, 17.08.2015  
Tel.: (0)5254.81-201760 Fax: (0)5254.81-201752

Abnahmebeauftragter  
**Inspection representative**  
Contrôleur  
Thomas Gollan

TW METALS  
OCT 06 2015  
ACCEPTED BY  
Annie Pearson

enteler Steel/Tube GmbH  
ostfach 13 40  
3043 Paderborn  
Deutschland  
el.: +49.5254.81-0 Fax: +49.5254.13666

**BENTELER**   
Steel/Tube

**ABNAHMEPRÜFZEUGNIS EN 10204-3.1**

**INSPECTION CERTIFICATE EN 10204-3.1**

**CERTIFICAT DE RECEPTION EN 10204-3.1**

**N 10204:2005-01**

**Dokument-Nr.:** 41-991981/001/P

**Document No.:**

**No. du document:**

**Prüf-Nr.:**  
**Inspection No.:**  
**No. du certificat:**

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**Kunden-Bestell-Nr.:**

46004784TW M49362520

**Hersteller:**

Warmrohrwerk/Zieherei

**Purchase Order No.:**

**Manufacturer:**

IDIN EN ISO 9001, ISO/TS-16949 CERTIFIED BY TÜV NORD CERTI

**No. de commande du client:**

**Producteur:**

IPED 2014/68/EU CERTIFIED BY TÜV NORD SYSTEMS

**Benteler Auftrags-Nr.:**

**Benteler Order No.:**

1632158

**Herstellerzeichen:**



**No. de commande Benteler:**

**Manufacturer's brand:**

Marque du producteur:

**Versandanzeigen-Nr.:**

**Dispatch Note No.:**

4186709

**Stempel des Abnahmebeauftragten:**

W/A

**No. d'avis d'expédition:**

**Stamp of the inspection representative:**

Poinçon du contrôleur:

**Produkt:** NAHTLOSE STAHLROHRE

**Stahlerschmelzungsverfahren:** ELEKTROSTAHL

**Product:** SEAMLESS STEEL TUBES

**Steelmaking process:** ELECTRIC FURNACE

**Produit:** TUBES D'ACIER SANS SOUDURE

**Procédé d'élaboration de l'acier:** FOUR ELECTRIQUE

**Lieferbedingungen:**

AMS-T-6736B-08 Type 1, ASTM-A 519-2006, MIL-T-6736B Type 1, AMS6360 Rev. M, AMS 2301K

**Terms of delivery:**

**Conditions de livraison:**

**Maße - Toleranzen:**

AMS 2253E-83, Aircraft Type, Seamless, Cold Finished

**Dimensions-tolerances:**

**Dimensions-tolérances:**

**Stahlsorte:**

GRADE 4130

**Steel grade:**

**Nuance d'acier:**

**Lieferzustand:**

Condition N

**Delivery condition:**

**État de livraison:**

**Produktkennzeichnung:**

FSD: BENTELER AMS6360M-AMS-T-6736 B 1-MIL-T-6736 B 1-AMS 2301K 4130 Condition N HEAT-NO.

**Product marking:**

CD AQ S DIMENSIONS WA GERMANY

**Marquage du produit:**

AEZ = Aitzintrenbeschriftung, Etching ink marking, Gravure à l'encre, FK = Farbkennzeichnung, color marking, marquage par couleur, FS = Farbschablonierung, paint stencilling, marquage par peinture, FSD = Farbstrahldrucker, Color jet printer, imprimante à jet d'encre de couleur, LK = Laserkennzeichnung, Laser marking, Marquage laser, PKE = Etikettenkennzeichnung, tag marking, marquage sur étiquette, PS = Prägestempel, die stamp, marquage par poinçonnage, TS = Tintenstrahlkennzeichnung, ink jet spray marking, imprimante à jet d'encre.



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**BENTELER**  
Steel/Tube

**ABNAHMEPRÜFZEUGNIS EN 10204-3.1**  
INSPECTION CERTIFICATE EN 10204-3.1  
CERTIFICAT DE RECEPTION EN 10204-3.1

Dokument-Nr.:  
Document No.:  
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41-991981/001/P

Prüf-Nr.:  
Inspection No.:  
No. du certificat:

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Page:  
Page:

Pos.	Stück	Maße	Gesamtlänge	Gewicht	Schmelzen-Nr.	Prüfdruck	Rohr-Nr.-Gruppe	Vielfachlängen
Item	Number	Dimensions	Length total	Weight	Heat No.	Test pressure	Tube number group	Multiple lengths
Poste	Nombre	Dimensions	Longueur totale	Poids	No. de coulée	Pression d'épreuve	Série de no. des tubes	Longueurs multiples
		feet	feet	lbs				
0016	40	0.750" O.D. * 0.083" WT 20 FT - 24 FT	813,65	472	602384			

Schmelzenanalyse [%] / Heat analysis [%] / Analyse sur coulée [%]

Pos.	Schmelzen-Nr.	C	SI	MN	P	S	CR	MO	NI	CU
Item	Heat No.									
Poste	No. de coulée									
0016	602384	0,310	0,250	0,53	0,011	0,003	0,89	0,19	0,08	0,13

Produktanalyse [%] / Product analysis [%] / Analyse sur produit [%]

Pos.	Schmelzen-Nr.	C	SI	MN	P	S	CR	MO	NI	CU
Item	Heat No.									
Poste	No. de coulée									
0016	602384	0,300	0,270	0,53	0,011	0,002	0,87	0,19	0,08	0,15

Prüfergebnisse / Test results / Résultats des essais

Die Rohre wurden zerstörungsfrei geprüft:

ET-test: acc. to ASTM-A 450; ET - Test method: acc. to ASTM-E 309; for imperfections;

PASSED

The tubes are non destructive tested:

ET-test: ET with rotating pancake coils; according to EN 10246-3; imperfections;  
Notch depth: 0,30 mm; notch width < = notch depth; notch length min. 2 x transducer width (max. 50 mm)

PASSED

Augensichtkontrolle:

PASSED

Materialverwechslungsprüfung:

PASSED

Maßkontrolle:

PASSED

Visual inspection:

Material conformity test:

Dimensions examination:

Examen visuel:

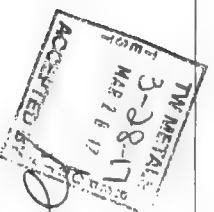
Vérification de la nuance:

Vérification des dimensions:

Ergebnisse der mechanischen Prüfung / Results of mechanical testing / Résultats des essais mécaniques

Die Probennahme erfolgte an Vielfachlängen.

The sampling was carried out on multiple lengths.  
L'échantillonnage était réalisé aux longueurs multiples.



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deutschland  
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Ugversuch längs bei RT, Vollprobe / Tensile test longitudinal at RT, Full section test specimen / Essai de traction longitudinale à TA, Epruvette a section complete

Pos.	Proben-Nr.	Schmelzen-Nr.	Probenabmessung	Streckgrenze	Zugfestigkeit	Dehnung
tem	Specimen No.	Heat No.	Specimen dimensions	Yield strength	Tensile strength	Elongation
Poste	No. de l'éprouv.	No. de coulée	Dimensions de l'éprouv.	Limite élastique	Résistance à la traction	Allongement
Anforderungen						
Requrements				mm	Rp 0,2 %	A2"
Exigences				MIN 75	KSI	%
0016	000001	602384	19,02 X 2,10	105	118	20,00
0016	000002	602384	19,02 X 2,10	105	119	20,00
0016	000003	602384	19,02 X 2,10	104	119	20,00
0016	000004	602384	19,02 X 2,10	103	119	20,00
0016	000005	602384	19,02 X 2,10	104	119	20,00

andentkohlung / Surface decarburization / Décarburation superficielle

Pos. / Item / Poste: 0016  
acc. to AMS-6360, partial decarburization outside max. 0.014 in, partial decarburization inside max. 0.014 in, partial decarburization outside and inside max. 0.018 in, partial decarburization outside and inside max. 0.457 mm, without total decarburization; partial decarb. out. max.: 0,356 mm; partial decarb. ins. max.: 0,356 mm

ermerk / Remark / Remarque

Pos. / Item / Poste: 0016

Certificate remarks: The steel grade corresponds to MIL-T-6736B, AMS 6360M, material free from mercury contamination, FAR BAA: 52.225-1 CANNOT COMPLY, DFARS BAA: 252.225-7007 CAN COMPLY, FAR TAA: 52.225-5 CAN COMPLY, No weld repair has been carried out, Country of origin of the material and heat: Germany, Aircraft quality steel acc. to AMS 2301K; see appendix page 1 of 1.

Pos. / Item / Poste: 0016

Macroscopic examination: acc. to ASTM-E 381

Pos. / Item / Poste: 0016

Magnetic particle inspec.: acc. to AMS 2301K/ASTM-E 1444, on prematerial

Pos. / Item / Poste: 0016

Grain size: acc. to ASTM-E 112; Grain size and finer: 5; Grain size: Longitudinal structure microscopy, On prematerial

erklärer(in) / Sales Personnel / Personne chargée : Mr Schwarz, Tel.: 05254 81-204311, Fax: 204391



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Deutschland

Telefon: +49.5254.81-0 Fax: +49.5254.13666

**BENTELER**

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ABNAHMEPRÜFZEUGNIS EN 10204-3.1

INSPECTION CERTIFICATE EN 10204-3.1

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No. du certificat:

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Paderborn Schloß Neuhaus, 09.03.2017, TEL.: 05254.81-201768 FAX: 05254.81-201752

Abnahmebeauftragter

Inspection representative

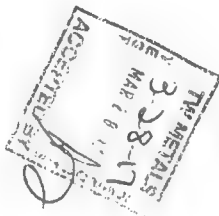
Contrôleur

H. A. THOMAS GOLLAN / Tat

Es wird bestätigt, daß die gelieferten Erzeugnisse den techn. Lieferbedingungen des Auftrages entsprechen. Dieses Dokument wurde mittels EDV erstellt und ist ohne Unterschrift rechtsgültig.

We certify that the supplied products comply with the order specification. This document was prepared by means of electronic data processing and is valid without signature.

Nous attestons que les produits livrés sont conformes aux stipulations de la commande. Ce document a été établi par traitement électronique de l'information et est valide sans signature.



Benteler Steel/Tube GmbH  
 Residenzstraße 1  
 3104 Paderborn  
 Germany  
 Tel.: 49. 5254. 81-0 Fax: 49. 5254. 13666



Abnahmeprüfzeugnis EN 10204-3.1 / Anhang  
**Inspection Certificate EN 10204.3.1 / appendix**  
 Certificat de réception EN 10204-3.1 / appendice

Dokument-Nr.  
**Document No.:** 41-991981/001/P  
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Halbzeuguntersuchung: Stahlsorte 4130 / **Semi finished product examination: grade 4130** / Produit semi-fini: nuance 4130

Schmelzen-Nr. Heat No. Coulée No.	Position Item Poste	Korngröße Grain size Grosseur de grain (ASTM-E 112)	Härtbarkeit (min. Anforderungen) Hardenability (min. requirements) Trempeabilité (exigence min.) (ASTM-A 255)		Magnetpulverprüfung Magnetic particle inspection Essai à la poudre magnétique (AMS 2301 K/ASTM-1444)		Makroätzung Macrostructure test Essai de macrostructure (ASTM-E 381)		
		min. 5	J(5/16") min. 35 HRC	J(8/16") min. 28 HRC	F max. 0,34	S max. 0,25	max. S 2	max. R 1	max. C 2
602384	016	9	42	34	0,010	0,005	S 2	R 1	C 2
Decarburization Depth		Outside 0,000 mm Inside 0,000 mm							

Der Stahl ist frei von Quecksilberverunreinigungen. / **The steel is free of mercury contamination.** / L'acier est libre des contaminations de mercure.

Paderborn Schloß Neuhaus, 09.03.2017  
 Tel.: (0)5254.81-201760 Fax: (0)5254.81-201752



Abnahmebeauftragter  
**Inspection representative**  
 Contrôleur

Thomas Gollan



A COMPANY OF MUELLER INDUSTRIES

PRECISION TUBE CO.  
287 WISSAHICKON AVE.  
NORTH WALES PA 19454

Control No: 1604

### CERTIFIED TEST REPORT

CUSTOMER PURCHASE ORDER NO.	CUST. ORD. NO.	PRECISION TUBE P/N
49354489 LINE 001	422327	24A031250580005

**SOLD:** TW METALS  
**TO** 175 TUBEWAY  
FOREST PARK, GA 30298  
UNITED STATES

**SHIP:** TW METALS  
**TO** 175 TUBEWAY  
FOREST PARK, GA 30298  
UNITED STATES

QUANTITY ORD.	DESCRIPTION	QTY. SHIPPED	DATE SHIPPED
1824 FT	METAL - 6061 ALUM TEMPER - T6 SPEC - <del>AMS 4082P</del> ASTM-B-210-12 AMS-WW-T-700/6C LENGTH - 12 FT LGTH TOL +.1250 IN -.0000 IN SHAPE - ROUND FINISH - STRAIGHT EXACT LENGTHS OD .3125 +.0030 -.0030 ID WALL .0580 +.0040 -.0040	2004 FT	08/05/16

### MECHANICAL PROPERTIES

SAMPLE #	TENSILE STRENGTH (P.S.I.)	YIELD STRENGTH (P.S.I.)	ELONGATION IN 2 INCHES (%)	ROCKWELL HARDNESS	AVERAGE GRAIN SIZE (MM.)
1	45,775	40,439	17		

### TEST REPORTS

#### DESTRUCTIVE TESTS

ACCEPTED BY

49354489  
AUG 09 2016

Comments: FAR BAA COMPLIES, DFARS BAA COMPLIES, FAR TAA COMPLIES

#### NON-DESTRUCTIVE TESTS

EDDY CURRENT: PASS

TW METALS

### CHEMICAL COMPOSITION

ALLOY: 6061		HEAT:		TRACEABILITY #: 388604						
DAS				RAW MATL VENDOR: PTC2249 - Kaiser Aluminum						
		Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Al
Min	9	0.40		0.15		0.80	0.04			Rem.
3.89										
Max		0.80	0.70	0.40	0.15	1.20	0.35	0.25	0.15	
OTHER ELEMENTS: 0.05 MAX EACH / 0.15 MAX TOTAL										

We hereby certify that the material has been manufactured and tested in accordance with the requirements of the applicable specifications and descriptions set forth on Precision Tube's sales acknowledgement. During the manufacturing, testing and inspection, the product did not come into direct contact with mercury or any of its compounds, nor with any mercury containing device employing a single boundary containment. Test results indicate that the material is compliant with the current revision of the RoHS Directive (2011/65/EU).

Melted and Manufactured in USA  
QMS Registered to ISO 9001: 2008

By:

*Art Onalitis*

Art Onalitis  
QA Manager

08/05/16

Page: 1 of 1

AK

# KAISER ALUMINUM

FABRICATED PRODUCTS

*Best in Class*

## CERTIFIED TEST REPORT

<http://Online.KaiserAluminum.com>

KAISER ALUMINUM  
FABRICATED PRODUCTS, LLC  
2425 STEVENS DRIVE  
RICHLAND, WA 99352

CUSTOMER PO NUMBER: PTC2249		CUSTOMER PART NUMBER: SPIRIT-371850		PRODUCT DESCRIPTION: 5.400 LB/PC .500 LB/-0 LB 1.312 OD X .085 WALL ESRT	
KAISER ORDER NUMBER: 320031	LINE ITEM: 001	SHIP DATE: 04/01/2016	KAISER LOT NUMBER: 50751-323	ALLOY: 6061	TEMPER: O
WEIGHT SHIPPED: 16135.000 LB	QUANTITY: 2913.000 PCS	B/L NUMBER: 004991	DIAM/DAF/THKNS: .	WIDTH: .	LENGTH: 13.984 FT
SHIP TO:  PRECISION TUBE CO 287 WISSAHICKON AVENUE N. WALES, PA 19454 USA			SOLD TO:  MUELLER INDUSTRIES, INC PRECISION TUBE 8285 TOURNAMENT DRIVE STE. 150 MEMPHIS, TN 38125 USA		



### Actual Physical Properties

REFERENCE	DASH#	SAMPLE#	UTS (KSI)	YTS (KSI)	%Elong in 2	HARDNESS	CONDUCT.	BEND
50751-323	0001	0002	17.3	5.9	26.7	NA N/A	N/A	N/A
50751-323	0001	0003	17.3	5.9	26.7	NA N/A	N/A	N/A
50751-323	0001	0004	17.3	5.4	27.2	NA N/A	N/A	N/A
50751-323	0001	0005	18.0	6.1	28.0	NA N/A	N/A	N/A
50751-323	0001	0006	17.4	5.7	26.4	NA N/A	N/A	N/A
50751-323	0001	0007	17.9	6.2	27.6	NA N/A	N/A	N/A
50751-323	0001	0008	17.5	5.8	26.6	NA N/A	N/A	N/A
50751-323	0001	0009	17.7	5.7	28.6	NA N/A	N/A	N/A
50751-323	0001	0010	16.9	5.6	25.2	NA N/A	N/A	N/A
50751-323	0001	0011	17.6	5.8	27.9	NA N/A	N/A	N/A
50751-323	0001	0012	17.8	6.9	27.4	NA N/A	N/A	N/A
50751-323	0001	0013	18.1	6.1	27.2	NA N/A	N/A	N/A
50751-323	0001	0014	17.4	5.7	28.3	NA N/A	N/A	N/A
50751-323	0001	0015	17.0	5.6	28.6	NA N/A	N/A	N/A
50751-323	0001	0016	18.2	5.8	26.6	NA N/A	N/A	N/A

### Chemical Composition (wt%), Aluminum Remainder

LIMITS	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Bi	Zr	Ea	Tot
Maximum	0.80	0.70	0.40	0.15	1.20	0.35	0.25	0.15	NA	NA	NA	0.05	.15
Minimum	0.40	0.00	0.15	0.00	0.80	0.04	0.00	0.00	NA	NA	NA	0.00	.0
F75366	.58	.29	.22	.06	.98	.08	.05	.02	.00	.00	.00	.01	.02

### Applicable Requirements:

ASTM-B241-12 NON-STENCILED ASTM-B221-13 ASTM-B345-11 AMS-QQ-A-200/8 97(R07) TYPE I  
UNS#A96061 Also conforms to EN 10204 3.1

TEST REPORTS  
ACCEPTED BY

49354489  
AUG 09 2016

*L.B.*  
TW METALS

Page 1 of 2

Plant Serial: 00013829  
Kaiser Order Number: 320031  
Line Item: 001

AK

**KAISER  
ALUMINUM**  
FABRICATED PRODUCTS

*Best in Class*

**CERTIFIED TEST REPORT**

<http://Online.KaiserAluminum.com>

KAISER ALUMINUM  
FABRICATED PRODUCTS, LLC  
2425 STEVENS DRIVE  
RICHLAND, WA 99352

**Miscellaneous Notes**

MANUFACTURED IN USA MELTED IN USA  
MERCURY IS NOT A NORMAL BACKGROUND ELEMENT IN ALUMINUM ALLOYS. NEITHER MERCURY NOR ANY  
OF ITS COMPOUNDS ARE UTILITZED BY KAISER ALUMINUM IN THE MANUFACTURE OF THIS MATERIAL.

**CERTIFICATION**

Kaiser Aluminum Fabricated Products, LLC hereby certifies that metal shipped under this order has been inspected and tested and found in conformance with applicable specifications forming a part of the description set forth in Kaiser's sales acknowledgement form. Any warranty is limited to that shown on Kaiser's general terms and conditions of sale. Test reports are on file, subject to examination.

JOSEPH AMES, QUALITY MANAGER

*Jph*

**TEST REPORTS  
ACCEPTED BY**

AUG 09 2016

*SLP*  
**TW METALS**

Plant Serial: 00013829  
Kaiser Order Number: 320031  
Line Item: 001

*SLP*

# MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M304H Rec500W.035  
 DATE: MAY 02 2017

PO / BATCH NO: PO36046/M137415

MATERIAL CERT REC'D: yes  
 QUANTITY RECEIVED: 60'  
 QUANTITY INSPECTED: 60'  
 QUANTITY REJECTED: 0

THICKNESS ORDERED: .035  
 THICKNESS RECEIVED: .032  
 SHEET SIZE ORDERED: N/A  
 SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y <input checked="" type="radio"/> N	
CORRECT FINISH	Y <input checked="" type="radio"/> N	
CORROSION	Y <input checked="" type="radio"/> N	
CORRECT GRAIN DIRECTION	Y <input checked="" type="radio"/> N	
CORRECT MATERIAL	Y <input checked="" type="radio"/> N	
CORRECT THICKNESS	Y <input checked="" type="radio"/> N	
PHOTO REQUIRED	Y <input checked="" type="radio"/> N	
CORRECT MATERIAL	Y <input checked="" type="radio"/> N	
CORRECT REF # TO LINK CERT	Y <input checked="" type="radio"/> N	4th # 1506679
CORRECT MATERIAL IDENTIFICATION	Y <input checked="" type="radio"/> N	
CORRECT M# ON THE MATERIAL	Y <input checked="" type="radio"/> N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y <input checked="" type="radio"/> N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y <input checked="" type="radio"/> N	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. RECORD RESULTS BELOW				
TYPE OF MATERIAL	HRC	HRB	DUR A	DUR D
SIZE OF TEST SAMPLE				
HARDNESS / DUROMETER READING				

*testers located in the Quality Office*

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>CB</u> DATE: <u>MAY 02 2017</u>	SIGNED OFF BY: _____ DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in:

# MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M304T80 500W.049  
 DATE: MAY 02 2017

PO / BATCH NO: 1036046/M137415

MATERIAL CERT REC'D: yes  
 QUANTITY RECEIVED: 20'  
 QUANTITY INSPECTED: 20'  
 QUANTITY REJECTED: 0

THICKNESS ORDERED: .049  
 THICKNESS RECEIVED: .048  
 SHEET SIZE ORDERED: N/A  
 SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y <input checked="" type="checkbox"/> N	
CORRECT FINISH	<input checked="" type="checkbox"/> Y N	
CORROSION	Y <input checked="" type="checkbox"/> N	
CORRECT GRAIN DIRECTION	<input checked="" type="checkbox"/> Y N	
CORRECT MATERIAL	<input checked="" type="checkbox"/> Y N	
CORRECT THICKNESS	<input checked="" type="checkbox"/> Y N	
PHOTO REQUIRED	Y <input checked="" type="checkbox"/> N	
CORRECT MATERIAL	<input checked="" type="checkbox"/> Y N	
CORRECT REF # TO LINK CERT	<input checked="" type="checkbox"/> Y N	ASTM A269 Ht # 4x1506712
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="checkbox"/> Y N	
CORRECT M# ON THE MATERIAL	<input checked="" type="checkbox"/> Y N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y <input checked="" type="checkbox"/> N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y <input checked="" type="checkbox"/> N	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. RECORD RESULTS BELOW				
TYPE OF MATERIAL	HRC	HRB	DUR A	DUR D
SIZE OF TEST SAMPLE				
HARDNESS / DUROMETER READING				

*testers located in the Quality Office*

<b>QC 18 INSPECTION</b>		<b>ENGINEERING SIGNOFF (if required)</b>	
INSPECTED BY: <u>CB</u> DATE: <u>MAY 02 2017</u>	SIGNED OFF BY: _____ DATE: _____		

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in:

# MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M304+ROG+5W.091  
DATE: MAY 02 2017

PO / BATCH NO: P036046/M137415

MATERIAL CERT REC'D: yes  
QUANTITY RECEIVED: 46'  
QUANTITY INSPECTED: 46'  
QUANTITY REJECTED: 0

THICKNESS ORDERED: .091  
THICKNESS RECEIVED: .084  
SHEET SIZE ORDERED: N/A  
SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y <input checked="" type="radio"/> N	
CORRECT FINISH	<input checked="" type="radio"/> N	
CORROSION	Y <input checked="" type="radio"/> N	
CORRECT GRAIN DIRECTION	<input checked="" type="radio"/> N	
CORRECT MATERIAL	<input checked="" type="radio"/> N	
CORRECT THICKNESS	<input checked="" type="radio"/> N	
PHOTO REQUIRED	Y <input checked="" type="radio"/> N	
CORRECT MATERIAL	<input checked="" type="radio"/> N	schedule 40. As per drawing D22-3 (Attach) PD.
CORRECT REF # TO LINK CERT	<input checked="" type="radio"/> N	Wt # 11h347
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="radio"/> N	
CORRECT M# ON THE MATERIAL	<input checked="" type="radio"/> N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y <input checked="" type="radio"/> N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y <input checked="" type="radio"/> N	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. RECORD RESULTS BELOW				
TYPE OF MATERIAL	HRC	HRB	DUR A	DUR D
SIZE OF TEST SAMPLE				
HARDNESS / DUROMETER READING				

testers located in the Quality Office

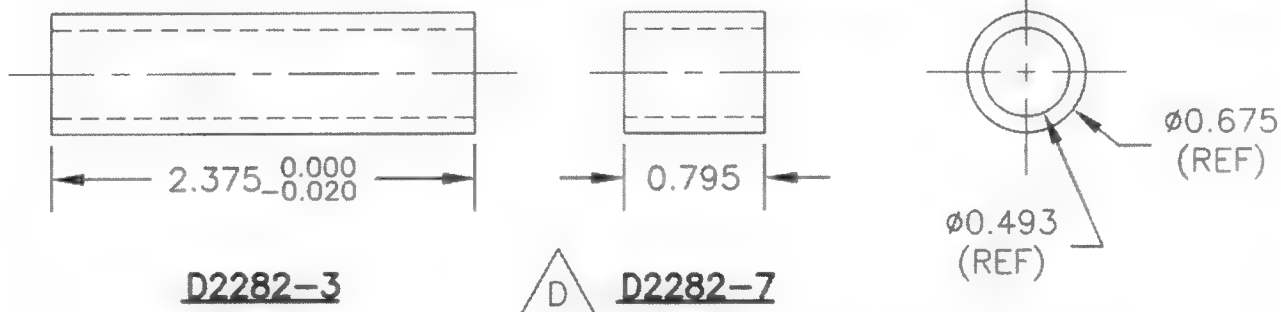
<b>QC 18 INSPECTION</b>		<b>ENGINEERING SIGNOFF (if required)</b>	
INSPECTED BY: <u>CB</u>	SIGNED OFF BY: _____	DATE: <u>MAY 02 2017</u>	DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in



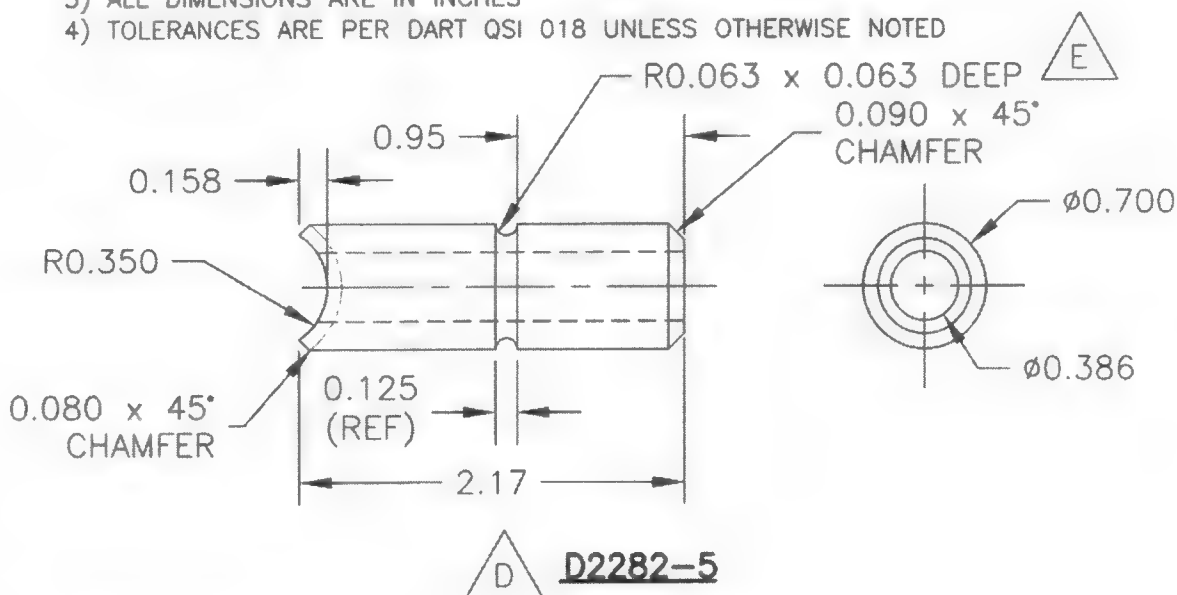
DESIGN BW	DRAWN BY <i>[Signature]</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D2282	REV. E SHEET 1 OF 2
DATE 05.06.07		TITLE HANDLE TUBES	SCALE 1:1
A	94.10.14	NEW ISSUE	
B	95.03.23	RE-DESIGN	
C	97.10.20	CORRECTED NUMBERING SCHEME	
D	05.03.16	REDESIGN D2282-5; 0.795 WAS 0.750	
E	05.06.07	D2282-5 304 SS WAS 303 SS; R0.063 x 0.063 WAS R0.080 x 0.030	

RELEASED  
*[Signature]*  
05/09/16



D2282-3/-7 TUBE:

- 1) MATERIAL: T304/T316 3/8 SCHEDULE 40 (REF. DART SPEC. M304TR0.675W.091)
- 2) BREAK ALL UNMARKED SHARP EDGES 0.005 TO 0.010
- 3) ALL DIMENSIONS ARE IN INCHES
- 4) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED



D2282-5 STEM:

- 1) MATERIAL: AISI 304 STAINLESS STEEL (REF. DART SPEC. M304R0.750)
- 2) BREAK ALL UNMARKED SHARP EDGES 0.005 TO 0.010
- 3) ALL DIMENSIONS ARE IN INCHES
- 4) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

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# MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M304+R0.750W.049  
 DATE: MAY 02 2017

PO / BATCH NO PO 36046/M137415

MATERIAL CERT REC'D: yes  
 QUANTITY RECEIVED: 80'  
 QUANTITY INSPECTED: 80'  
 QUANTITY REJECTED: 0

THICKNESS ORDERED: .049  
 THICKNESS RECEIVED: .047  
 SHEET SIZE ORDERED: N/A  
 SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y <input checked="" type="checkbox"/>	
CORRECT FINISH	<input checked="" type="checkbox"/> N	
CORROSION	Y <input checked="" type="checkbox"/>	
CORRECT GRAIN DIRECTION	<input checked="" type="checkbox"/> N	
CORRECT MATERIAL	<input checked="" type="checkbox"/> N	
CORRECT THICKNESS	<input checked="" type="checkbox"/> N	
PHOTO REQUIRED	Y <input checked="" type="checkbox"/>	
CORRECT MATERIAL	Y N	ASTM A269
CORRECT REF # TO LINK CERT	Y N	HT # 4X1501783
CORRECT MATERIAL IDENTIFICATION	Y N	
CORRECT M# ON THE MATERIAL	Y N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y <input checked="" type="checkbox"/>	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y <input checked="" type="checkbox"/>	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW				
TYPE OF MATERIAL	HRC	HRB	DUR A	DUR D
SIZE OF TEST SAMPLE				
HARDNESS / DUROMETER READING				

testers located in the Quality Office

QC-18 INSPECTION		ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>ep</u> <sup>DAS</sup> DATE: <u>MAY 02 2017</u>	SIGNED OFF BY: _____ DATE: _____	

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

# MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M4130NT 0.750W.44

PO / BATCH NO PO36046/M137415

DATE: MAY 02 2017

MATERIAL CERT REC'D: YES  
 QUANTITY RECEIVED: 23.9'  
 QUANTITY INSPECTED: 23.9'  
 QUANTITY REJECTED: 0

THICKNESS ORDERED: .049  
 THICKNESS RECEIVED: .047  
 SHEET SIZE ORDERED: N/A  
 SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y <input checked="" type="checkbox"/>	
CORRECT FINISH	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORROSION	Y <input checked="" type="checkbox"/>	
CORRECT GRAIN DIRECTION	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT MATERIAL	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT THICKNESS	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
PHOTO REQUIRED	Y <input checked="" type="checkbox"/>	
CORRECT MATERIAL	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT REF # TO LINK CERT	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
CORRECT M# ON THE MATERIAL	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y <input checked="" type="checkbox"/>	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y <input checked="" type="checkbox"/>	

MIL-T-6736  
HT #593355

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW				
TYPE OF MATERIAL	HRC	HRB	DUR A	DUR D
SIZE OF TEST SAMPLE				
HARDNESS / DUROMETER READING				

*testers located in the Quality Office*

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>CB</u> DATE: <u>MAY 02 2017</u>	SIGNED OFF BY: _____ DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in.

# MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M4130Nto 750w.083  
 DATE: MAY 02 2017

PO / BATCH NO: PO36046/M137445

MATERIAL CERT REC'D: yes  
 QUANTITY RECEIVED: 20  
 QUANTITY INSPECTED: 20  
 QUANTITY REJECTED: R

THICKNESS ORDERED: .083  
 THICKNESS RECEIVED: .078  
 SHEET SIZE ORDERED: N/A  
 SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y <input checked="" type="radio"/> N	
CORRECT FINISH	<input checked="" type="radio"/> Y <input checked="" type="radio"/> N	
CORROSION	Y <input checked="" type="radio"/> N	
CORRECT GRAIN DIRECTION	<input checked="" type="radio"/> Y <input checked="" type="radio"/> N	
CORRECT MATERIAL	<input checked="" type="radio"/> Y <input checked="" type="radio"/> N	
CORRECT THICKNESS	<input checked="" type="radio"/> Y <input checked="" type="radio"/> N	
PHOTO REQUIRED	Y <input checked="" type="radio"/> N	
CORRECT MATERIAL	<input checked="" type="radio"/> Y <input checked="" type="radio"/> N	
CORRECT REF # TO LINK CERT	<input checked="" type="radio"/> Y <input checked="" type="radio"/> N	<u>MIL-T-6736</u> <u>HT #602384</u>
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="radio"/> Y <input checked="" type="radio"/> N	
CORRECT M# ON THE MATERIAL	<input checked="" type="radio"/> Y <input checked="" type="radio"/> N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y <input checked="" type="radio"/> N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y <input checked="" type="radio"/> N	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW				
TYPE OF MATERIAL	HRC	HRB	DUR A	DUR D
SIZE OF TEST SAMPLE				
HARDNESS / DUROMETER READING				

testers located in the Quality Office

<b>QC 18 INSPECTION</b>	<b>ENGINEERING SIGNOFF (if required)</b>
INSPECTED BY: <u>OB</u> DATE: <u>MAY 02 2017</u>	SIGNED OFF BY: _____ DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in:

# MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M6061+GTC.3125W.058

PO / BATCH NO: PO36046/M137415

DATE: MAY 02 2017

MATERIAL CERT REC'D: yes  
 QUANTITY RECEIVED: 24'  
 QUANTITY INSPECTED: 24'  
 QUANTITY REJECTED: 0

THICKNESS ORDERED: 058  
 THICKNESS RECEIVED: .058  
 SHEET SIZE ORDERED: N/A  
 SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y <input checked="" type="checkbox"/>	
CORRECT FINISH	<input checked="" type="checkbox"/> N	
CORROSION	Y <input checked="" type="checkbox"/>	
CORRECT GRAIN DIRECTION	<input checked="" type="checkbox"/> N	
CORRECT MATERIAL	<input checked="" type="checkbox"/> N	
CORRECT THICKNESS	<input checked="" type="checkbox"/> N	
PHOTO REQUIRED	Y <input checked="" type="checkbox"/>	
CORRECT MATERIAL	<input checked="" type="checkbox"/> N	ASTM B210
CORRECT REF # TO LINK CERT	<input checked="" type="checkbox"/> N	HT #388604
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="checkbox"/> N	
CORRECT M# ON THE MATERIAL	<input checked="" type="checkbox"/> N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y <input checked="" type="checkbox"/>	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y <input checked="" type="checkbox"/>	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. RECORD RESULTS BELOW				
TYPE OF MATERIAL	HRC	HRB	DUR A	DUR D
SIZE OF TEST SAMPLE				
HARDNESS / DUROMETER READING				

*testers located in the Quality Office*

## QC 18 INSPECTION

ENGINEERING SIGNOFF (if required)

INSPECTED BY: CB

SIGNED OFF BY: \_\_\_\_\_

DATE: MAY 02 2017

DATE: \_\_\_\_\_

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in:



Dart Aerospace Ltd.  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
Tel: 613 632 9577  
Fax: 613 632 1053

## PURCHASE ORDER

Purchase Order ID PO36046

Purchase Order Date 4/24/2017

PO Print Date 4/24/2017

Page Number 1 of 4

Order From :

VU-TWM001

Ship To : DART AEROSPACE LTD

TW METALS  
PO BOX 933014  
ALTANTA, GA 31193-3014  
US

1270 ABERDEEN  
HAWKESBURY, ON K6A 1K7  
CANADA

E-MAILED  
APR 24 2017

Contact Name

Vendor Phone 585 768 5600

Buyer

Chantal Lavoie

Customer POID

Customer Tax #

10127-2607

Ship To Contact

Ship To Phone

Ship Via: YRC COLLECT

Ship Acct:

Terms

Net 30

Currency

USD

FOB

FCA - (Free Carrier)

Line Nbr	Reference Vendor Part Number Line Comments Delivery Comments	Description/ Mfg ID	Req Date/ Taxable Promise Date	CD	Req Qty/ Unit of Measure	PO Unit Price	Extended Price
1	M304TR0.500W.035	304 RD Tube .500 x .035W	5/2/2017 Yes 5/2/2017		48.00 f	\$1.50	\$72.00
MATERIAL: AISI 304/316 SA SEAMLESS ROUND TUBING AS PER ASTM A213 OR AMSE SA213 OR ASTM A269							90.00
Line Total:							\$72.00
2	M304TR0.500W.049	304 RD Tube .500 x .049W	5/2/2017 Yes 5/2/2017		20.00 f	\$2.80	\$56.00
MATERIAL: AISI 304/316 SA SEAMLESS ROUND TUBING AS PER ASTM A213 OR AMSE SA213 OR ASTM A269							1x.
Line Total:							\$56.00
3	M304TR0.675W.091	304 RD Tube .675 x .091W	5/2/2017 Yes 5/2/2017		40.00 f	\$5.00	\$200.00
MATERIAL: AISI 304/316 SA SEAMLESS ROUND TUBING AS PER ASTM A213 OR AMSE SA213 OR ASTM A269							232.92

Note:

4/24/2017



Dart Aerospace Ltd.  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
Tel: 613 632 9577  
Fax: 613 632 1053

## PURCHASE ORDER

Purchase Order ID PO36046

Purchase Order Date 4/24/2017

PO Print Date 4/24/2017

Page Number 2 of 4

Order From :  
TW METALS  
PO BOX 933014  
ALTANTA, GA 31193-3014  
US

VU-TWM001

Ship To : DART AEROSPACE LTD  
1270 ABERDEEN  
HAWKESBURY, ON K6A 1K7  
CANADA

Contact Name  
Vendor Phone 585 768 5600  
  
Ship To Contact  
Ship To Phone  
Ship Via: YRC COLLECT  
Ship Acct:

Buyer  
Customer POID  
Customer Tax # 10127-2607  
Terms Net 30  
Currency USD  
FOB FCA - (Free Carrier)

Chantal Lavoie

4	M304TR0.750W.049	304 RD Tube .750 x .049W	5/2/2017	80.00	Line Total:	\$200.00
			Yes	f		
			5/2/2017		\$2.10	\$168.00

MATERIAL: AISI 304/316 SA SEAMLESS ROUND TUBING  
AS PER ASTM A213 OR AMSE SA213 OR ASTM A269

5	M4130NT0.750W.049	4130 RD Tube .750 x.049W	5/2/2017	20.00	Line Total:	\$168.00
			Yes	f	\$6.00	\$120.00
			5/2/2017			143.50

MATERIAL: AISI 4130N SEAMLESS STEEL TUBING  
AS PER MIL-T-6736 OR AMS 6371/6360/6361  
6362/6373/6374

Note:

4/24/2017



Dart Aerospace Ltd.  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
Tel: 613 632 9577  
Fax: 613 632 1053

## PURCHASE ORDER

Purchase Order ID PO36046

Purchase Order Date 4/24/2017

PO Print Date 4/24/2017

Page Number 3 of 4

Order From :  
TW METALS  
PO BOX 933014  
ALTANTA, GA 31193-3014  
US

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Buyer Chantal Lavoie  
Customer POID  
Customer Tax # 10127-2607  
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6	M4130NT0.750W.083	4130 RD Tube .750 x.083W	5/2/2017	20.00	\$3.85	\$77.00
			Yes	f		78.28
			5/2/2017			

MATERIAL: AISI 4130N SEAMLESS STEEL TUBING  
AS PER MIL-T-6736 OR AMS 6371/6360/6361  
6362/6373/6374

Rec'd 20.333 ft (1x)

Line Total: \$77.00

7	M6061T6T0.3125W.058	ALUM TUBE .3125 x .058w	5/2/2017	20.00	\$2.50	\$50.00
			Yes	f		60.00
			5/2/2017			

MATERIAL: 6061-T6/T62/T6510/T6511 SEAMLESS TUBING  
AS PER WW-T-700/6 OR QQ-A-200/8 OR QQ-A-225/8 OR  
AMS 4080 OR AMS 4082 OR AMS 4083 OR ASTM B210 OR  
ASTM B241

Rec'd 20 ft (2x)

Line Total: \$50.00

Note:

SP17-5-2



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Purchase Order Date 4/24/2017

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Page Number 4 of 4

**Order From :**

VU-TWM001

**Ship To :** DART AEROSPACE LTD

TW METALS  
PO BOX 933014  
ALTANTA, GA 31193-3014  
US

1270 ABERDEEN  
HAWKESBURY, ON K6A 1K7  
CANADA

**Contact Name**

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**Ship To Phone**

**Ship Via:** YRC COLLECT

**Ship Acct:**

**Buyer**

Chantal Lavoie

**Customer POID**

**Customer Tax #** 10127-2607

**Terms** Net 30

**Currency** USD

**FOB** FCA - (Free Carrier)

8	71401-45	PROCUREMENT QUALITY CLAUSES	5/2/2017	1.00	\$0.00	\$0.00
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No

5/2/2017

**Procurement Quality Clauses**

A005 right of entry

A012 chemical and physical test report

A016 personnel qualification

A017 raw material identification (as applicable)

A026 certification of material conformance

A041 quality management system

A042 dart notification by supplier

A043 retention of quality documents

821752

**Line Total:**

\$0.00

**PO Total:**

\$743.00

Note: Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit [www.dartaerospace.com](http://www.dartaerospace.com) for further explanation.

Change Nbr: 1

Change Date: 4/24/2017